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## PCT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

PRINS, A., W.  
Vereenigde  
Nieuwe Parklaan 97  
NL-2587 BN The Hague  
PAYS-BAS

Date of mailing (day/month/year) 27 March 2001 (27.03.01)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference P53578PC00	
International application No. PCT/NL00/00427	International filing date (day/month/year) 20 June 2000 (20.06.00)

1. The following indications appeared on record concerning:	
<input checked="" type="checkbox"/> the applicant	<input checked="" type="checkbox"/> the inventor <input type="checkbox"/> the agent <input type="checkbox"/> the common representative
Name and Address BRAMER, Albertus, Maria Bikolaan 63 NL-4105 HB Culemborg Netherlands	State of Nationality NL
	State of Residence NL
	Telephone No.
	Facsimile No.
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:	
<input type="checkbox"/> the person <input type="checkbox"/> the name <input checked="" type="checkbox"/> the address <input type="checkbox"/> the nationality <input type="checkbox"/> the residence	
Name and Address BRAMER, Albertus, Maria Bikolaan 63 NL-4105 HB Culemburg Netherlands	State of Nationality NL
	State of Residence NL
	Telephone No.
	Facsimile No.
3. Further observations, if necessary:	
4. A copy of this notification has been sent to:	
<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Dominique DELMAS
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

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## PCT INTERNATIONAL COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

PRINS, A., W.  
Vereenigde  
Nieuwe Parklaan 97  
NL-2587 BN The Hague  
PAYS-BAS

Date of mailing (day/month/year) 26 January 2001 (26.01.01)	<b>IMPORTANT NOTIFICATION</b>
Applicant's or agent's file reference P53578PC00	
International application No. PCT/NL00/00427	International filing date (day/month/year) 20 June 2000 (20.06.00)

## 1. The following indications appeared on record concerning:

☒ the applicant    ☒ the inventor    ☐ the agent    ☐ the common representative

Name and Address BRAMER, Albertus, Maria Schaarland 10 NL-5663 JR Geldrop Netherlands	State of Nationality NL	State of Residence NL
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

## 2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person    ☐ the name    ☒ the address    ☐ the nationality    ☐ the residence

Name and Address BRAMER, Albertus, Maria Bikolaan 63 NL-4105 HB Culemborg Netherlands	State of Nationality NL	State of Residence NL
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

## 3. Further observations, if necessary:

## 4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input checked="" type="checkbox"/> the designated Offices concerned
<input checked="" type="checkbox"/> the International Searching Authority	<input type="checkbox"/> the elected Offices concerned
<input type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

<b>The International Bureau of WIPO</b> 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	Authorized officer  <b>Dominique DELMAS</b>  Telephone No.: (41-22) 338.83.38
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## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner  
 US Department of Commerce  
 United States Patent and Trademark  
 Office, PCT  
 2011 South Clark Place Room  
 CP2/5C24  
 Arlington, VA 22202  
 ETATS-UNIS D'AMERIQUE  
 in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 01 March 2001 (01.03.01)	
<b>International application No.</b> PCT/NL00/00427	<b>Applicant's or agent's file reference</b> P53578PC00
<b>International filing date (day/month/year)</b> 20 June 2000 (20.06.00)	<b>Priority date (day/month/year)</b> 21 June 1999 (21.06.99)
<b>Applicant</b> BRAMER, Albertus, Maria et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:  
 22 January 2001 (22.01.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<b>The International Bureau of WIPO</b> 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Dominique DELMAS Telephone No.: (41-22) 338.83.38
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10/009 853

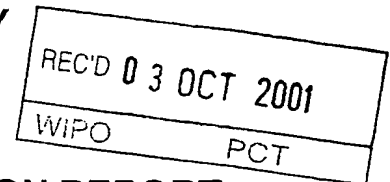
14

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference P53578PC00		<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/NL00/00427	International filing date (day/month/year) 20/06/2000	Priority date (day/month/year) 21/06/1999	
International Patent Classification (IPC) or national classification and IPC G01F11/22		<b>RECEIVED</b>  MAY 29 2003  TECHNOLOGY CENTER R3700	
Applicant SARA LEE/DE N.V. et al.			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 6 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 5 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand  22/01/2001	Date of completion of this report  01.10.2001
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Loades, M  Telephone No. +49 89 2399 2184  

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/NL00/00427

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

### Description, pages:

3-9	as originally filed		
1,2	as received on	18/09/2001	with letter of 17/09/2001

### Claims, No.:

1-24	as received on	18/09/2001	with letter of 17/09/2001
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### Drawings, sheets:

1/5-5/5	as originally filed
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2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/NL00/00427

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application.
- ☒ claims Nos. 17-19.

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- ☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 17-19 are so unclear that no meaningful opinion could be formed (*specify*):  
**see separate sheet**
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☐ no international search report has been established for the said claims Nos. .

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

- ☐ the written form has not been furnished or does not comply with the standard.
- ☐ the computer readable form has not been furnished or does not comply with the standard.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/NL00/00427

## 1. Statement

Novelty (N)	Yes:	Claims	1-16,20-24
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-16,20-24
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-16,20-24
	No:	Claims	

## 2. Citations and explanations see separate sheet

## VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:  
see separate sheet

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
see separate sheet

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/NL00/00427

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The scope of claim 17 is not clear. In particular, the restrictive effect of the phrase "being adapted to be loaded with a holder according to...5-12" is not clear. It would appear that the applicant intended that the claim should be limited to the same invention as claim 1, but at present this is not evident from the wording.

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. The following documents are referred to in this report

- D1: US-A-5 836 482 (OPHARDT HEINER ET AL) 17 November 1998 (1998-11-17)
- D2: US-A-4 334 640 (THIJSEN HENRICUS A C ET AL) 15 June 1982 (1982-06-15)
- D3: GB-A-2 103 296 (DAGMA GMBH & CO) 16 February 1983 (1983-02-16)  
cited in the application
- D4: EP-A-0 067 466 (DOUWE EGBERTS TABAKSFAB) 22 December 1982  
(1982-12-22)

2. Review of the prior art documents: — — —

D1 discloses a dosing device for viscous concentrates (see e.g. col. 1, lines 4-12), wherein a gear pump is used for dosing (see e.g. col. 4, lines 44-51).

D2 and D4 disclose the use of a peristaltic-type pump to dispense viscous liquid.

D3 (referred to on page 1 of the description) relates to a bellows type pump used for dispensing viscous liquid.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/NL00/00427

**3. Novelty and inventive step:**

Claim 1:

The restrictive effect on the claim of the passage "being suitable for dispensing.... space of the holder", lines 3-9 of the claim, is difficult to determine, but it appears merely to indicate that the device should be suitable for viscous concentrates, and for connecting to a line (which supplies the concentrate).

The gear pump 52 shown in fig. 2 of D1 has an inlet 74, outlet 42, and a flow path between, in which the pump itself is located. In the embodiment of D1, the inlet is connected to the storage container 16 of a viscous concentrate.

In D1, the gear pump is constructed with the drive axis perpendicular to the axis defined by the inlet and outlet, whereas claim 1 specifies an axial arrangement.

This appears to solve the problem of bulkiness of the structure which existed in the prior art.

This feature would appear to represent an inventive step, since it is not hinted at in D1 or any other document cited.

Thus claim 1 subject matter and that of the dependent claims 2-16,20-24 appear to be new and inventive.

**Re Item VII**

**Certain defects in the international application**

1. Reference numerals should have been used in the claims.
2. The amendment on page 2 (see last line) is formally incorrect. An additional page (2a) with the missing matter should have been supplied.

**Re Item VIII**

**Certain observations on the international application**

a. The restrictive effect on the claim of the passage "being suitable for dispensing.... space of the holder", lines 3-9 of claim 1, is indeterminate. The holder, concentrate, storage space, etc., are all not part of the claim and so it is not clear exactly what limitations are imposed by this passage.

b. The dependency of claim 22 is most confusing:

claim 20 already includes a holder according to any of claims 13-16, and claim 13 is dependent on any preceding claim. Thus the phrase "wherein the holder comprises a dosing device according to any one of claims 5-12" is confusing and apparently superfluous.

EPO - DG 1

18. 09. 2001

CMJ P53578PC00

Title: Dosing device adapted for dispensing a concentrate from a holder in a metered manner. (79)

This invention relates to a dosing device comprising a housing comprising at least one inlet, at least one outlet, a liquid flow path extending from the inlet to the outlet, and a pump included in the liquid flow path, the dosing device being suitable for dispensing in a metered manner a viscous concentrate from a holder in which the concentrate is contained, the concentrate in diluted form giving a product suitable for consumption, the holder comprising a storage space in which the concentrate is contained, and the inlet of the dosing device being adapted to be connected, in use, to the storage space of the holder, wherein the pump comprises a gear pump.

Such a device is known from US patent 5,836,482. In this known device the shaft for driving the gear pump extends in a direction perpendicular to the direction from the inlet to the outlet. This has the disadvantage that a combination of the device and a motor for driving the drive shaft becomes rather bulky, especially in the direction of the driving shaft. An object of the invention is to provide a solution which enables to avoid this problem. To that end, the dosing device according to the invention is characterized in that the gear pump is driven by a drive shaft of which an axial axis extends in a direction from the inlet to the outlet.

Because the drive shaft extends in a direction from the inlet to the outlet the device in combination with means for driving the drive shaft may be designed to have overall small dimensions. Furthermore such a construction is easy realize.

British patent application 2103296 discloses a dosing device comprises a hollow cylinder-shaped body manufactured from a flexible elastic material. The body in question encloses a pumping volume. Further, the device comprises an operating element for compressing the body in an

axial direction. The device also comprises a hollow cylinder-shaped housing which is adapted to encompass said body on its outer side at least during the phase in which the pumping volume is reduced. The flexible body is cyclically deformed in an axial direction, with the result that in each cycle a predetermined amount of extract is dispensed. To that end, the operating element is driven by means of a pulsating magnetic field. For driving the operating element, the dosing device is placed in a unit for generating a pulsating magnetic field. In a pulsating magnetic drive, the position of the dosing device with respect to the unit in axial direction of the dosing device is of great influence on the power to be supplied. This makes placing the dosing device in the unit very critical.

This known dosing device has as a disadvantage that its action is dependent on the viscosity of the concentrate. The dosing device does not comprise a gear pump.

As the dosing device according to the invention comprises a gear pump included in the liquid flow path, it is no longer necessary, as in the device known from the British patent application 2 103 296, to utilize a pulsating drive. Because a pulsating drive can be omitted, the placement of the dosing device in a dispensing machine is no longer critical. A further advantage is that in the diluted form of the concentrate, the so-called zebra effect does not arise because the concentrate is not dispensed in a pulsating manner.

US patent 4,334,690 and EP-067 466 each disclose a dosing device comprising a dispensing tube which is squeezed so as to force a quantity of concentrate through the dispersing end of the tube.

Further, by virtue of the gear pump, the dosing device can be of economically advantageous construction.

A further advantage of the device according to the invention is that metering can be set steplessly.

-see further page 2, lines 19 ff. of the original specification --



EPO - DG 1

New claims

18. 09. 2001

(79)

1. A dosing device comprising a housing comprising at least one inlet, at least one outlet, a liquid flow path extending from the inlet to the outlet, and a pump included in the liquid flow path, the dosing device being suitable for dispensing in  
5 a metered manner a viscous concentrate from a holder in which the concentrate is contained, the concentrate in diluted form giving a product suitable for consumption, the holder comprising a storage space in which the concentrate is contained, and the inlet of the dosing device being adapted to be connected, in use, to the storage space of the holder, wherein the pump comprises a gear pump,  
10 characterized in that the gear pump is driven by a drive shaft of which an axial axis extends in a direction from the inlet to the outlet .
2. A dosing device according to claim 1, characterized in that the gear wheels of the gear pump are arranged to rotate around axes extending in a direction from the inlet to the outlet.
- 15 3. A dosing device according to claim 1 or 2, characterized in that the housing of the dosing device is of substantially rotation-symmetrical design, with an axial axis of the housing extending in the direction from the inlet to the outlet.
4. A dosing device according to any one of the preceding claims,  
20 characterized in that the dosing device is provided, downstream of the gear pump, with a valve included in the liquid flow path, which opens when the liquid pressure upstream of the valve exceeds a predetermined threshold value.
5. A dosing device according to any one of the preceding claims,  
25 characterized in that the dosing device comprises a rotor rotatably connected to the housing for rotation around a rotation axis, for causing the rotor to rotate about the rotation axis by means of at least one changing magnetic field, the

## New page 2

rotor being mechanically connected to the gear pump for driving the gear pump with the rotating rotor.

6. A dosing device according to claim 5, characterized in that the rotor is connected to the drive shaft for driving the gear pump.

5 7. A dosing device according to claim 5 or 6, characterized in that the rotor is included in the liquid flow path.

8. A dosing device according to claim 7, characterized in that the rotor is included in the liquid flow path upstream of the gear pump.

9. A dosing device according to any one of claims 5-8, characterized in that  
10 the rotor is provided with a magnetizable material such as soft iron.

10. A dosing device according to any one of claims 5-9, characterized in that the rotor comprises a permanent magnet for contactlessly driving the rotor by means of at least one changing magnetic field.

11. A dosing device according to any one of claims 5-10, characterized in that  
15 the rotor comprises a plurality of arms extending in radial direction of the rotation axis.

12. A dosing device according to claims 10 and 11, characterized in that the ends of the arms form poles of the permanent magnet.

13. A holder filled with concentrate which in diluted form is suitable for  
20 consumption, the holder comprising a dosing device according to any one of the preceding claims.

14. A holder according to claim 13, characterized in that the holder comprises a bag formed from a flexible sheetlike material in which the concentrate is contained, and a housing in which the bag is received.

25 15. A holder according to claim 14, characterized in that the inlet of the dosing device is connected to the bag.

16. A holder according to any one of claims 13-15, characterized in that the housing is of more rigid design than the bag.

17. An apparatus for preparing a beverage suitable for consumption, the  
30 apparatus being adapted to be loaded with a holder according to any one of the

New page 3

preceding claims 13-16 which is fitted with a dosing device according to any one of claims 5-12, the apparatus comprising a magnetization unit for generating at least one magnetic field changing such that the rotor is contactlessly driven by the magnetization unit for the dosing device to dispense concentrate from the holder in a metered manner, and means for diluting the dispensed concentrate with water for obtaining the beverage suitable for consumption.

18. An apparatus according to claim 17, characterized in that the magnetization unit comprises a magnet and driving means for rotating the magnet for generating the changing magnetic field.

19. An apparatus according to claim 17, characterized in that the magnetization unit comprises a plurality of coils.

20. An assembly comprising an apparatus for preparing a beverage suitable for consumption and a holder according to any one of the preceding claims 13-16, the apparatus being loaded with the holder, and the apparatus comprising driving means for driving the dosing device for the dosing device to dispense concentrate from the holder in a metered manner, and means for diluting the dispensed concentrate with water for obtaining the beverage suitable for consumption.

21. An assembly according to claim 20, characterized in that the holder is detachably connected to the apparatus.

22. An assembly according to claim 20 or 21, wherein the holder comprises a dosing device according to any one of claims 5-12, characterized in that the apparatus further comprises a magnetization unit for generating at least one magnetic field changing such that the rotor is driven for causing the dosing device to dispense concentrate from the holder.

23. An assembly according to claim 22, characterized in that the magnetization unit comprises a magnet and driving means for rotating the magnet for generating the changing magnetic field.

24. An assembly according to claim 22, characterized in that the magnetization unit comprises a plurality of coils.

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# PATENT COOPERATION TREATY



## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P53578PC00	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/NL00/00427	International filing date (day/month/year) 20/06/2000	Priority date (day/month/year) 21/06/1999
International Patent Classification (IPC) or national classification and IPC G01F11/22		
Applicant SARA LEE/DE N.V. et al.		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 5 sheets.</p>
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the report</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input checked="" type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input checked="" type="checkbox"/> Certain defects in the international application</li> <li>VIII <input checked="" type="checkbox"/> Certain observations on the international application</li> </ul>

Date of submission of the demand 22/01/2001	Date of completion of this report 01.10.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Loades, M Telephone No. +49 89 2399 2184 

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# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/NL00/00427

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

### Description, pages:

3-9	as originally filed		
1,2	as received on	18/09/2001	with letter of 17/09/2001

### Claims, No.:

1-24	as received on	18/09/2001	with letter of 17/09/2001
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### Drawings, sheets:

1/5-5/5	as originally filed
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2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

**THIS PAGE BLANK (USPTO)**



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/NL00/00427

- ☐ the description,      pages:
- ☐ the claims,      Nos.:
- ☐ the drawings,      sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application.
- ☒ claims Nos. 17-19.

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- ☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 17-19 are so unclear that no meaningful opinion could be formed (*specify*):  
**see separate sheet**
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☐ no international search report has been established for the said claims Nos. .

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

- ☐ the written form has not been furnished or does not comply with the standard.
- ☐ the computer readable form has not been furnished or does not comply with the standard.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/NL00/00427

## 1. Statement

Novelty (N)	Yes:	Claims	1-16,20-24
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-16,20-24
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-16,20-24
	No:	Claims	

## 2. Citations and explanations see separate sheet

## VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:  
see separate sheet

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
see separate sheet

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**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The scope of claim 17 is not clear. In particular, the restrictive effect of the phrase "being adapted to be loaded with a holder according to...5-12" is not clear. It would appear that the applicant intended that the claim should be limited to the same invention as claim 1, but at present this is not evident from the wording.

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. The following documents are referred to in this report

- D1: US-A-5 836 482 (OPHARDT HEINER ET AL) 17 November 1998 (1998-11-17)
- D2: US-A-4 334 640 (THIJSEN HENRICUS A C ET AL) 15 June 1982 (1982-06-15)
- D3: GB-A-2 103 296 (DAGMA GMBH & CO) 16 February 1983 (1983-02-16)  
cited in the application
- D4: EP-A-0 067 466 (DOUWE EGBERTS TABAKSFAB) 22 December 1982  
(1982-12-22)

2. Review of the prior art documents:

D1 discloses a dosing device for viscous concentrates (see e.g. col. 1, lines 4-12), wherein a gear pump is used for dosing (see e.g. col. 4, lines 44-51).

D2 and D4 disclose the use of a peristaltic-type pump to dispense viscous liquid.

D3 (referred to on page 1 of the description) relates to a bellows type pump used for dispensing viscous liquid.

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**3. Novelty and inventive step:**

**Claim 1:**

The restrictive effect on the claim of the passage "being suitable for dispensing.... space of the holder", lines 3-9 of the claim, is difficult to determine, but it appears merely to indicate that the device should be suitable for viscous concentrates, and for connecting to a line (which supplies the concentrate).

The gear pump 52 shown in fig. 2 of D1 has an inlet 74, outlet 42, and a flow path between, in which the pump itself is located. In the embodiment of D1, the inlet is connected to the storage container 16 of a viscous concentrate.

In D1, the gear pump is constructed with the drive axis perpendicular to the axis defined by the inlet and outlet, whereas claim 1 specifies an axial arrangement. This appears to solve the problem of bulkiness of the structure which existed in the prior art.

This feature would appear to represent an inventive step, since it is not hinted at in D1 or any other document cited.

Thus claim 1 subject matter and that of the dependent claims 2-16, 20-24 appear to be new and inventive.

**Re Item VII**

**Certain defects in the international application**

1. Reference numerals should have been used in the claims.
2. The amendment on page 2 (see last line) is formally incorrect. An additional page (2a) with the missing matter should have been supplied.

**Re Item VIII**

**Certain observations on the international application**

a. The restrictive effect on the claim of the passage "being suitable for dispensing.... space of the holder", lines 3-9 of claim 1, is indeterminate. The holder, concentrate, storage space, etc., are all not part of the claim and so it is not clear exactly what limitations are imposed by this passage.

b. The dependency of claim 22 is most confusing:

claim 20 already includes a holder according to any of claims 13-16, and claim 13 is dependent on any preceding claim. Thus the phrase "wherein the holder comprises a dosing device according to any one of claims 5-12" is confusing and apparently superfluous.

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18. 09. 2001

CMJ P53578PC00

Title: Dosing device adapted for dispensing a concentrate from a holder  
in a metered manner. (79)

This invention relates to a dosing device comprising a housing comprising at least one inlet, at least one outlet, a liquid flow path extending from the inlet to the outlet, and a pump included in the liquid flow path, the dosing device being suitable for dispensing in a metered manner a viscous concentrate from a holder in which the concentrate is contained, the concentrate in diluted form giving a product suitable for consumption, the holder comprising a storage space in which the concentrate is contained, and the inlet of the dosing device being adapted to be connected, in use, to the storage space of the holder, wherein the pump comprises a gear pump.

Such a device is known from US patent 5,836,482. In this known device the shaft for driving the gear pump extends in a direction perpendicular to the direction from the inlet to the outlet. This has the disadvantage that a combination of the device and a motor for driving the drive shaft becomes rather bulky, especially in the direction of the driving shaft. An object of the invention is to provide a solution which enables to avoid this problem. To that end, the dosing device according to the invention is characterized in that the gear pump is driven by a drive shaft of which an axial axis extends in a direction from the inlet to the outlet.

Because the drive shaft extends in a direction from the inlet to the outlet the device in combination with means for driving the drive shaft may be designed to have overall small dimensions. Furthermore such a construction is easy realize.

British patent application 2103296 discloses a dosing device comprises a hollow cylinder-shaped body manufactured from a flexible elastic material. The body in question encloses a pumping volume. Further, the device comprises an operating element for compressing the body in an

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axial direction. The device also comprises a hollow cylinder-shaped housing which is adapted to encompass said body on its outer side at least during the phase in which the pumping volume is reduced. The flexible body is cyclically deformed in an axial direction, with the result that in each cycle a predetermined amount of extract is dispensed. To that end, the operating element is driven by means of a pulsating magnetic field. For driving the operating element, the dosing device is placed in a unit for generating a pulsating magnetic field. In a pulsating magnetic drive, the position of the dosing device with respect to the unit in axial direction of the dosing device is of great influence on the power to be supplied. This makes placing the dosing device in the unit very critical.

This known dosing device has as a disadvantage that its action is dependent on the viscosity of the concentrate. The dosing device does not comprise a gear pump.

As the dosing device according to the invention comprises a gear pump included in the liquid flow path, it is no longer necessary, as in the device known from the British patent application 2 103 296, to utilize a pulsating drive. Because a pulsating drive can be omitted, the placement of the dosing device in a dispensing machine is no longer critical. A further advantage is that in the diluted form of the concentrate, the so-called zebra effect does not arise because the concentrate is not dispensed in a pulsating manner.

US patent 4,334,690 and EP-067 466 each disclose a dosing device comprising a dispensing tube which is squeezed so as to force a quantity of concentrate through the dispersing end of the tube.

Further, by virtue of the gear pump, the dosing device can be of economically advantageous construction.

A further advantage of the device according to the invention is that metering can be set steplessly.

-see further page 2, lines 19 ff. of the original specification --

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10/009853

JC13 Rec'd PCT/PTO 11 DEC 2001

EPO - DG 1

New claims

18. 09. 2001

(79)

1. A dosing device comprising a housing comprising at least one inlet, at least one outlet, a liquid flow path extending from the inlet to the outlet, and a pump included in the liquid flow path, the dosing device being suitable for dispensing in  
5 a metered manner a viscous concentrate from a holder in which the concentrate is contained, the concentrate in diluted form giving a product suitable for consumption, the holder comprising a storage space in which the concentrate is contained, and the inlet of the dosing device being adapted to be connected, in use, to the storage space of the holder, wherein the pump comprises a gear pump,  
10 characterized in that the gear pump is driven by a drive shaft of which an axial axis extends in a direction from the inlet to the outlet .
2. A dosing device according to claim 1, characterized in that the gear wheels of the gear pump are arranged to rotate around axes extending in a direction from the inlet to the outlet.
- 15 3. A dosing device according to claim 1 or 2, characterized in that the housing of the dosing device is of substantially rotation-symmetrical design, with an axial axis of the housing extending in the direction from the inlet to the outlet.
4. A dosing device according to any one of the preceding claims,  
20 characterized in that the dosing device is provided, downstream of the gear pump, with a valve included in the liquid flow path, which opens when the liquid pressure upstream of the valve exceeds a predetermined threshold value.
5. A dosing device according to any one of the preceding claims, characterized in that the dosing device comprises a rotor rotatably connected to  
25 the housing for rotation around a rotation axis, for causing the rotor to rotate about the rotation axis by means of at least one changing magnetic field, the

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## New page 2

rotor being mechanically connected to the gear pump for driving the gear pump with the rotating rotor.

6. A dosing device according to claim 5, characterized in that the rotor is connected to the drive shaft for driving the gear pump.

5 7. A dosing device according to claim 5 or 6, characterized in that the rotor is included in the liquid flow path.

8. A dosing device according to claim 7, characterized in that the rotor is included in the liquid flow path upstream of the gear pump.

9. A dosing device according to any one of claims 5-8, characterized in that  
10 the rotor is provided with a magnetizable material such as soft iron.

10. A dosing device according to any one of claims 5-9, characterized in that the rotor comprises a permanent magnet for contactlessly driving the rotor by means of at least one changing magnetic field.

11. A dosing device according to any one of claims 5-10, characterized in that  
15 the rotor comprises a plurality of arms extending in radial direction of the rotation axis.

12. A dosing device according to claims 10 and 11, characterized in that the ends of the arms form poles of the permanent magnet.

13. A holder filled with concentrate which in diluted form is suitable for  
20 consumption, the holder comprising a dosing device according to any one of the preceding claims.

14. A holder according to claim 13, characterized in that the holder comprises a bag formed from a flexible sheetlike material in which the concentrate is contained, and a housing in which the bag is received.

25 15. A holder according to claim 14, characterized in that the inlet of the dosing device is connected to the bag.

16. A holder according to any one of claims 13-15, characterized in that the housing is of more rigid design than the bag.

17. An apparatus for preparing a beverage suitable for consumption, the  
30 apparatus being adapted to be loaded with a holder according to any one of the

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New page 3

preceding claims 13-16 which is fitted with a dosing device according to any one of claims 5-12, the apparatus comprising a magnetization unit for generating at least one magnetic field changing such that the rotor is contactlessly driven by the magnetization unit for the dosing device to dispense concentrate from the holder in a metered manner, and means for diluting the dispensed concentrate with water for obtaining the beverage suitable for consumption.

18. An apparatus according to claim 17, characterized in that the magnetization unit comprises a magnet and driving means for rotating the magnet for generating the changing magnetic field.

19. An apparatus according to claim 17, characterized in that the magnetization unit comprises a plurality of coils.

20. An assembly comprising an apparatus for preparing a beverage suitable for consumption and a holder according to any one of the preceding claims 13-16, the apparatus being loaded with the holder, and the apparatus comprising driving means for driving the dosing device for the dosing device to dispense concentrate from the holder in a metered manner, and means for diluting the dispensed concentrate with water for obtaining the beverage suitable for consumption.

21. An assembly according to claim 20, characterized in that the holder is detachably connected to the apparatus.

22. An assembly according to claim 20 or 21, wherein the holder comprises a dosing device according to any one of claims 5-12, characterized in that the apparatus further comprises a magnetization unit for generating at least one magnetic field changing such that the rotor is driven for causing the dosing device to dispense concentrate from the holder.

23. An assembly according to claim 22, characterized in that the magnetization unit comprises a magnet and driving means for rotating the magnet for generating the changing magnetic field.

24. An assembly according to claim 22, characterized in that the magnetization unit comprises a plurality of coils.

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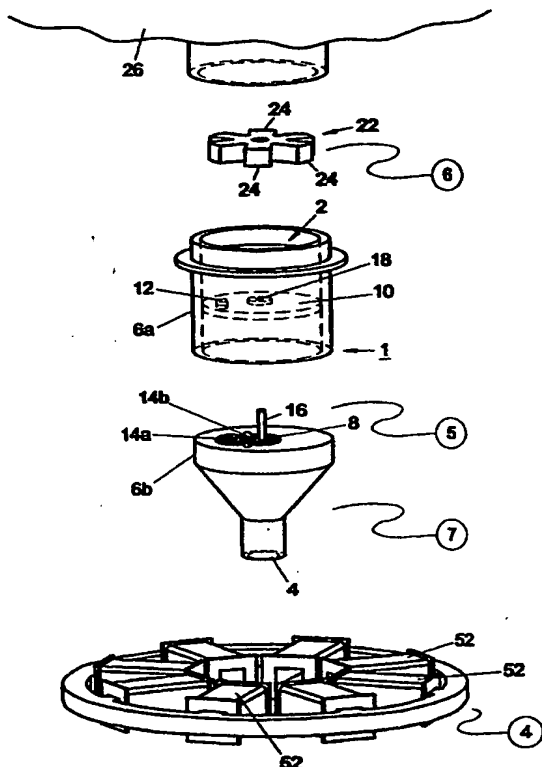
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(54) Title: DOSING DEVICE ADAPTED FOR DISPENSING A CONCENTRATE FROM A HOLDER IN A METERED MANNER



(57) Abstract: The invention relates to a dosing device comprising a housing comprising at least one inlet, at least one outlet, and a liquid flow path extending from the inlet to the outlet. The dosing device is adapted for dispensing in a metered manner a viscous concentrate from a holder. The concentrate in diluted condition forms a beverage suitable for consumption. The dosing device is adapted to be connected, in use, to a storage space of the holder. According to the invention, the dosing device comprises a gear pump to be included in the liquid flow path, which gear pump can be driven in particular by a rotor located upstream of the gear pump, by means of changing magnetic fields.

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patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

— *Without international search report and to be republished upon receipt of that report.*

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Title:     Dosing device adapted for dispensing a concentrate from a holder in a metered manner.

          This invention relates to a dosing device comprising a housing comprising at least one inlet, at least one outlet, a liquid flow path extending from the inlet to the outlet, and a pump included in the liquid flow path, the dosing device being adapted for dispensing in a metered  
5     manner a viscous concentrate from a holder in which the concentrate is contained, the concentrate in diluted form giving a product suitable for consumption, the holder comprising a storage space in which the concentrate is contained, and the inlet of the dosing device being adapted to be connected, in use, to the storage space of the holder.

10           Such a device is known from British patent application 2103296. The dosing device described therein comprises a hollow cylinder-shaped body manufactured from a flexible elastic material. The body in question encloses a pumping volume. Further, the device comprises an operating element for compressing the body in an axial direction. The device also  
15     comprises a hollow cylinder-shaped housing which is adapted to encompass said body on its outer side at least during the phase in which the pumping volume is reduced. The flexible body is cyclically deformed in an axial direction, with the result that in each cycle a predetermined amount of extract is dispensed. To that end, the operating element is driven by means  
20     of a pulsating magnetic field. For driving the operating element, the dosing device is placed in a unit for generating a pulsating magnetic field. In a pulsating magnetic drive, the position of the dosing device with respect to the unit in axial direction of the dosing device is of great influence on the power to be supplied. This makes placing the dosing device in the unit very  
25     critical.

          Further, the known dosing device has as a disadvantage that its action is dependent on the viscosity of the concentrate.

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The object of the invention is to provide an improved dosing device. To that end, the dosing device according to the invention is characterized in that the pump comprises a gear pump.

As the dosing device comprises a gear pump included in the liquid  
5 flow path, it is no longer necessary, as in the known device, to utilize a pulsating drive. Because a pulsating drive can be omitted, the placement of the dosing device in a dispensing machine is no longer critical. A further advantage is that in the diluted form of the concentrate, the so-called zebra effect does not arise because the concentrate is not dispensed in a pulsating  
10 manner.

Further, by virtue of the gear pump, the dosing device can be of economically advantageous construction.

A further advantage of the device according to the invention is that metering can be set steplessly. Furthermore, the gear pump can be arranged  
15 such that the rotation axis of each gear pump is directed approximately parallel to the direction of the liquid flow path. Such a construction is easy to realize. Moreover, the dosing device can be designed with small overall dimensions.

According to a more advanced embodiment, the dosing device is provided,  
20 upstream of the gear pump, with a rotor mechanically connected to the gear pump, for driving the gear pump using a changing magnetic field. Preferably the rotor is connected to the drive shaft for driving the gear pump.

An advantage is that the rotor can be included in the liquid flow path,  
25 so that this also obtains the function of stirrer. In particular, the dosing device is driven by a drive shaft of which an axial axis is directed in the direction from the inlet to the outlet. As a dynamic liquid sealing of the drive shaft can be omitted, there is relatively little energy loss and there is a very small chance of leakage or contamination. A further advantage is that

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the concentrate remaining behind in the dosing device after use is hermetically sealed from the outside world.

What is also achieved by virtue of the specific direction of the drive shaft is that the dosing device can be placed in a dispensing machine rotation-independently. The position of the rotor is not critical then. If the dosing device is connected to a holder filled with the concentrate, this connection can likewise be effected rotation-independently.

According to the preferred embodiment, the dosing device comprises a substantially rotation-symmetrical housing of which an axial axis extends in the direction from the inlet to the outlet. In particular, the dosing device is provided, downstream of the gear pump, with a valve included in the liquid flow path which opens when the liquid pressure upstream of the valve exceeds a predetermined threshold value. The use of a gear pump in combination with a pressure relief valve has the advantage that no leakage flow owing to internal play arises in the non-driven condition. Moreover, the valve provides for a microbiological sealing, which is important for beverages suitable for consumption.

The holder according to the invention is characterized in that it is filled with the concentrate which in diluted condition is suitable for consumption, the holder being fitted with a dosing device according to the invention as described hereinbefore.

As the dosing device according to the invention, viewed in axial direction, can be made of low design, less length, viewed in this direction, is needed for driving than in the known linear magnet. This creates the possibility of making the dosing device extendible instead of foldable, so that a tearing strip in the holder, when it is designed as a so-called bag in box, can be omitted. This provides the advantage that making the bag in box operational involves a simpler operation. In particular, accordingly, the holder is provided with a bag formed from flexible sheetlike material, in

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which the concentrate is contained, and a housing in which the bag is accommodated.

The invention also relates to an apparatus for preparing a beverage suitable for consumption, the apparatus being adapted to be charged with a holder as mentioned hereinbefore. The apparatus comprises a magnetization unit for generating at least one magnetic field which changes so as to drive the rotor to allow the dosing device to dispense concentrate from the holder in a metered manner. The apparatus further comprises means for diluting the dispensed concentrate with water for obtaining the beverage suitable for consumption. The magnetization unit can be provided with a magnet and driving means for rotating a magnet for generating the changing magnetic field. It is also possible, however, that the magnetization unit is provided with a plurality of coils for generating the changing magnetic field. The invention also relates to an assembly comprising an apparatus for preparing a beverage suitable for consumption and a holder as described hereinbefore. The apparatus is adapted to be loaded with the holder, the apparatus comprising driving means for driving the dosing device to cause the dosing device to dispense concentrate from the holder in a metered manner, and means for diluting the dispensed concentrate with water for obtaining the beverage suitable for consumption.

The invention will presently be further explained with reference to the drawings, in which:

Fig. 1 shows an exploded view of a possible embodiment of a dosing device according to the invention, which is connected to a holder according to the invention. Fig. 1 also shows a magnetization unit of an apparatus for preparing a beverage suitable for consumption;

Fig. 2 shows a number of parts of the dosing device according to Fig. 1;

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Fig. 3 shows a number of parts of the dosing device and the apparatus for preparing a beverage suitable for consumption according to Fig. 1;

Fig. 4a shows a top plan view of the gear pump of the dosing device according to Fig. 1;

Fig. 4b shows a cross section of the dosing device according to Fig. 1 which is placed in the magnetization unit of Fig. 1;

Fig. 5a shows a top plan view of the dosing device according to Fig. 1 which is placed in the magnetization unit according to Fig. 1;

Fig. 5b shows a view of the dosing device according to Fig. 1 which is placed in the magnetization unit according to Fig. 1; and

Fig. 6 shows a holder with a dosing device according to the invention, an apparatus for preparing a beverage suitable for consumption according to the invention, and an assembly comprising the apparatus and the holder according to the invention.

In Figs. 1-6, reference numeral 1 indicates a dosing device according to the invention. The dosing device comprises an inlet 2 and at least one outlet 4.

The liquid flow path extends from the inlet 2 to the outlet 4. In this example, the dosing device comprises a housing 6a and 6b composed of two parts, which is rotation-symmetrical around an axis which is directed in the direction of the liquid flow path.

In the housing 6a, 6b, a gear pump 8 is included. At the top, the gear pump 8 comprises a covering plate 10 having an inflow opening 12. The inflow opening 12 is in fluid communication with a space where the teeth of, in this case two, gearwheels 14a and 14b mesh. The gearwheel 14b is driven by a drive shaft 16 which in mounted condition extends through an opening 18 of the covering plate 10. The drive shaft 16 can be driven directly by means of an external drive, for rotation of the gear pump. The gear pump 8 is provided at its underside with an outflow opening 20 for dispensing

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liquid. The drive shaft 16 is so directed that an axial axis of this drive shaft is directed in the direction from the inlet 2 to the outlet 4. In this example, the housing 6a, 6b is designed to be substantially rotation-symmetrical around the axial axis, likewise extending in the direction from the inlet 2 to the outlet 4.

In this example, however, the dosing device is provided, upstream of the gear pump 8, with a rotor 22 connected mechanically with the gear pump, in this example connected mechanically with the rotary shaft 16. In mounted condition, this rotor 22 is disposed above the covering plate 10.

The rotor can be driven by means of an external drive for rotating the gear pump 8. Preferably, the rotor is adapted to be driven by means of a changing magnetic field, for the purpose of driving the gear pump 8.

In this example it holds, further, that the rotor 22 is included in the liquid flow path mentioned. In this example, the rotor is provided with a permanent magnet for contactlessly driving the rotor by means of at least one varying magnetic field. In particular it holds, in this example, that the rotor comprises a plurality of arms 24 extending in radial direction of the rotation axis (drive shaft 16). More particularly, there are only two arms, disposed in line with each other and hence forming a beamlike body. The ends of the arms form poles of the permanent magnet mentioned. The poles of the permanent magnet will want to follow the changing magnetic field, which has as a result that the rotor and the drive shaft 16 will start to rotate. The device described up to this point works as follows. Suppose that the inlet 2 of the dosing device is connected to a holder 26, shown schematically in Figs. 1 and 6, in which an amount of concentrate, such as, for instance, coffee concentrate, is present. The holder 26, as shown best in Fig. 6, is fitted with the dosing device according to Fig. 1. In this example, the holder 26 includes a bag 28 (indicated by broken lines), formed by a flexible sheetlike material, in which the concentrate is contained, and a housing 30 in which the bag 28 is accommodated. The housing 30 is

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preferably made of substantially rigid design and hence is more rigid than the bag 28. The inlet 2 of the dosing device is in fluid communication with the inside of the bag 28. By presently generating a magnetic field changing in a predetermined manner, the rotor 22 will start to rotate in a  
5 predetermined manner. As a consequence, the gear pump 8 will likewise start to rotate, with the result that concentrate flows via the inflow opening 12 and the space between the teeth of the gearwheels to the outflow opening 20 mentioned. Thus the amount of concentrate dispensed in a metered manner corresponds with the angle of rotation through which the rotor 22 is  
10 rotated. The relation is substantially linear.

In Fig. 6, reference numeral 31 designates an apparatus for preparing a beverage suitable for consumption. The apparatus 31 is adapted to be loaded with the holder 26. The apparatus 31 comprises a  
magnetization unit 32 for generating the changing magnetic field referred to  
15 for driving the rotor. Further, the apparatus comprises means 34 for diluting the concentrate dispensed by the dosing device 1 with water. These means 34 comprise a hot water generator 36 and a mixing unit 38. In use, the housing 6a, 6b of the dosing device is inserted through an opening 40 of the magnetization device, such that the outlet 4 of the dosing device reaches  
20 into an opening 42 of the mixing device 38. A control unit 44 of the apparatus 31 controls the magnetization unit 32 via line 45, such that a changing magnetic field is generated which causes the rotor 22 to rotate through a predetermined angle of rotation. As a result, from the holder 26 a predetermined amount of concentrate is dispensed to the mixing device 38.  
25 The control unit 44 also activates the hot water unit 36 and the mixing unit 38 via respective electrical lines 46 and 48. As a result, hot water is sent from the hot water unit 36 to the mixing unit 38. In the mixing unit, the hot water is mixed with the dispensed concentrate, after which the concentrate, in diluted condition and hence in the condition of a beverage suitable for  
30 consumption, leaves an outlet opening 50 of the apparatus 31.

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In this example, the magnetization unit 32 comprises a plurality of coils 52 for generating the changing magnetic field.

The invention is not limited in any way to the embodiments outlined hereinabove. Thus, the rotor 22 may also be provided exclusively with soft iron. Magnetization of the rotor is then effected by the magnetic field of the magnetization unit 31. The rotor will want to orient in this changing magnetic field, so that the rotation is effected. The rotor 22 may also be driven, in a manner known per se, as is known for an eddy current motor. Upon rotation of the rotor, fly-back pulses arise in the coils 52 of the magnetization device which are not energized. These fly-back pulses can be utilized in the magnetization device in a manner known per se to determine the rotational position of the rotor. On the basis of this rotational position, a (feedback) control configuration known per se can be utilized.

It is also possible that the coils 52 are replaced by permanent magnets, these magnets being mechanically rotated for generating the changing magnetic field.

Further, in the outflow opening 20 referred to, a valve 54 may be included which opens when the liquid pressure upstream of the valve exceeds a predetermined threshold value. This involves a so-called non-return valve comprising a shut-off member 56 with a spring 58 which is schematically shown in this example.

In this example, the housing 6a and 6b is made of a suitable plastic. The gearwheels 14a and 14b and the drive shaft 16 are also made of plastic. The only metal part is therefore the rotor 22. It is also possible that the rotor is included in the liquid flow path downstream of the gear pump. The gear pump, instead of being driven by means of the rotor, can also be driven in a different manner. Thus, the gear pump can also be driven mechanically, by means of, for instance, a motor. This motor can then be a part of the apparatus 31. The valve 54 can also be designed as a so-called

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step valve. Such variants are all understood to fall within the scope of the invention.

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## CLAIMS

1. A dosing device comprising a housing comprising at least one inlet, at least one outlet, a liquid flow path extending from the inlet to the outlet, and a pump included in the liquid flow path, the dosing device being adapted for dispensing in a metered manner a viscous concentrate from a holder in which the concentrate is contained, the concentrate in diluted form giving a product suitable for consumption, the holder comprising a storage space in which the concentrate is contained, and the inlet of the dosing device being adapted to be connected, in use, to the storage space of the holder, characterized in that the pump comprises a gear pump.
2. A dosing device according to claim 1, characterized in that the gear pump is driven by a drive shaft of which an axial axis extends in a direction from the inlet to the outlet .
3. A dosing device according to claim 1 or 2, characterized in that the housing of the dosing device is of substantially rotation-symmetrical design, with an axial axis of the housing extending in the direction from the inlet to the outlet.
4. A dosing device according to any one of the preceding claims, characterized in that the dosing device is provided, downstream of the gear pump, with a valve included in the liquid flow path, which opens when the liquid pressure upstream of the valve exceeds a predetermined threshold value.
5. A dosing device according to any one of the preceding claims, characterized in that the dosing device comprises a rotor rotatably connected to the housing for rotation around a rotation axis, for causing the rotor to rotate about the rotation axis by means of at least one changing magnetic field, the rotor being mechanically connected to the gear pump for driving the gear pump with the rotating rotor.

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6. A dosing device according to claims 2 and 5, characterized in that the rotor is connected to the drive shaft for driving the gear pump.

7. A dosing device according to claim 5 or 6, characterized in that the rotor is included in the liquid flow path.

5 8. A dosing device according to claim 7, characterized in that the rotor is included in the liquid flow path upstream of the gear pump.

9. A dosing device according to any one of claims 5-8, characterized in that the rotor is provided with a magnetizable material such as soft iron.

10 10. A dosing device according to any one of claims 5-9, characterized in that the rotor comprises a permanent magnet for contactlessly driving the rotor by means of at least one changing magnetic field.

11. A dosing device according to any one of claims 5-10, characterized in that the rotor comprises a plurality of arms extending in radial direction of the rotation axis.

15 12. A dosing device according to claims 10 and 11, characterized in that the ends of the arms form poles of the permanent magnet.

13. A holder filled with concentrate which in diluted form is suitable for consumption, the holder comprising a dosing device according to any one of the preceding claims.

20 14. A holder according to claim 13, characterized in that the holder comprises a bag formed from a flexible sheetlike material in which the concentrate is contained, and a housing in which the bag is received.

15. A holder according to claim 14, characterized in that the inlet of the dosing device is connected to the bag.

25 16. A holder according to any one of claims 13-15, characterized in that the housing is of more rigid design than the bag.

17. An apparatus for preparing a beverage suitable for consumption, the apparatus being adapted to be loaded with a holder according to any one of the preceding claims 13-16 which is fitted with a dosing device according to  
30 any one of claims 5-12, the apparatus comprising a magnetization unit for

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generating at least one magnetic field changing such that the rotor is contactlessly driven by the magnetization unit for the dosing device to dispense concentrate from the holder in a metered manner, and means for diluting the dispensed concentrate with water for obtaining the beverage suitable for consumption.

18. An apparatus according to claim 17, characterized in that the magnetization unit comprises a magnet and driving means for rotating the magnet for generating the changing magnetic field.

19. An apparatus according to claim 17, characterized in that the magnetization unit comprises a plurality of coils.

20. An assembly comprising an apparatus for preparing a beverage suitable for consumption and a holder according to any one of the preceding claims 13-16, the apparatus being loaded with the holder, and the apparatus comprising driving means for driving the dosing device for the dosing device to dispense concentrate from the holder in a metered manner, and means for diluting the dispensed concentrate with water for obtaining the beverage suitable for consumption.

21. An assembly according to claim 20, characterized in that the holder is detachably connected to the apparatus.

22. An assembly according to claim 20 or 21, wherein the holder comprises a dosing device according to any one of claims 5-12, characterized in that the apparatus further comprises a magnetization unit for generating at least one magnetic field changing such that the rotor is driven for causing the dosing device to dispense concentrate from the holder..

23. An assembly according to claim 22, characterized in that the magnetization unit comprises a magnet and driving means for rotating the magnet for generating the changing magnetic field.

24. An assembly according to claim 22, characterized in that the magnetization unit comprises a plurality of coils.

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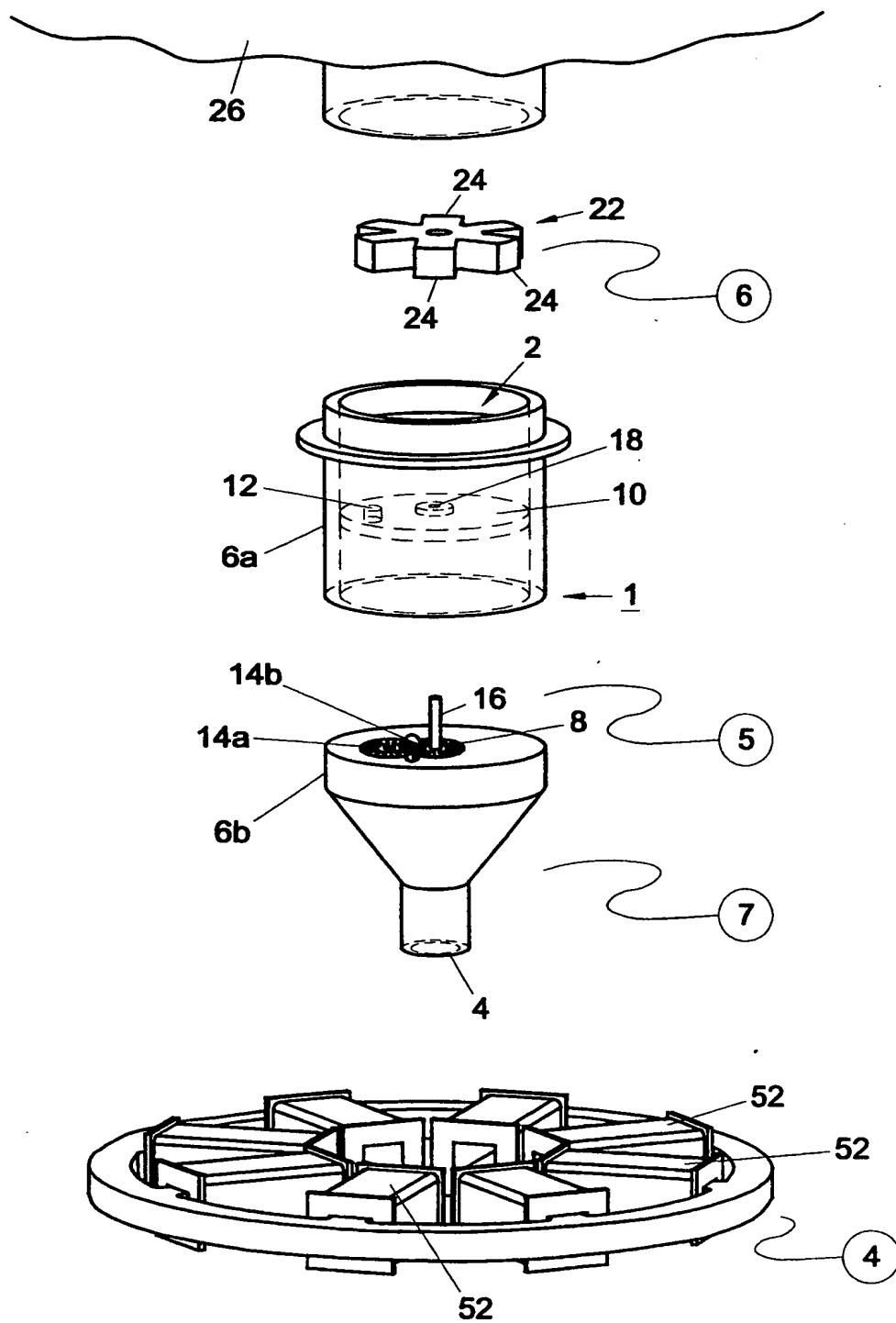


Fig. 1

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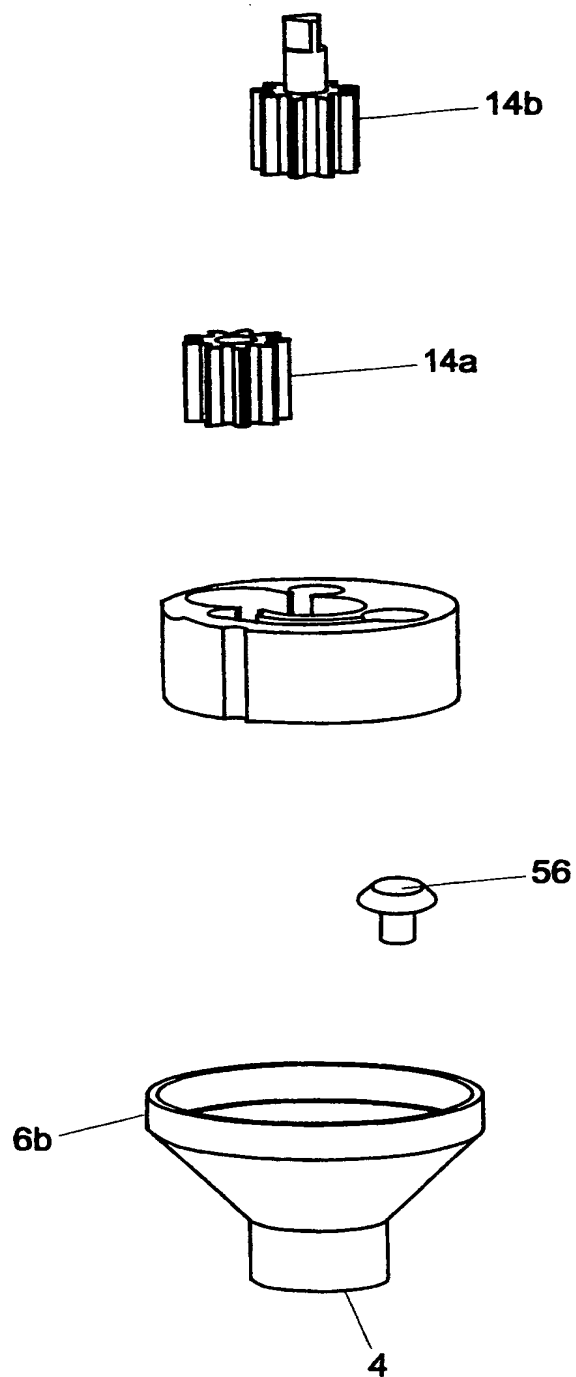
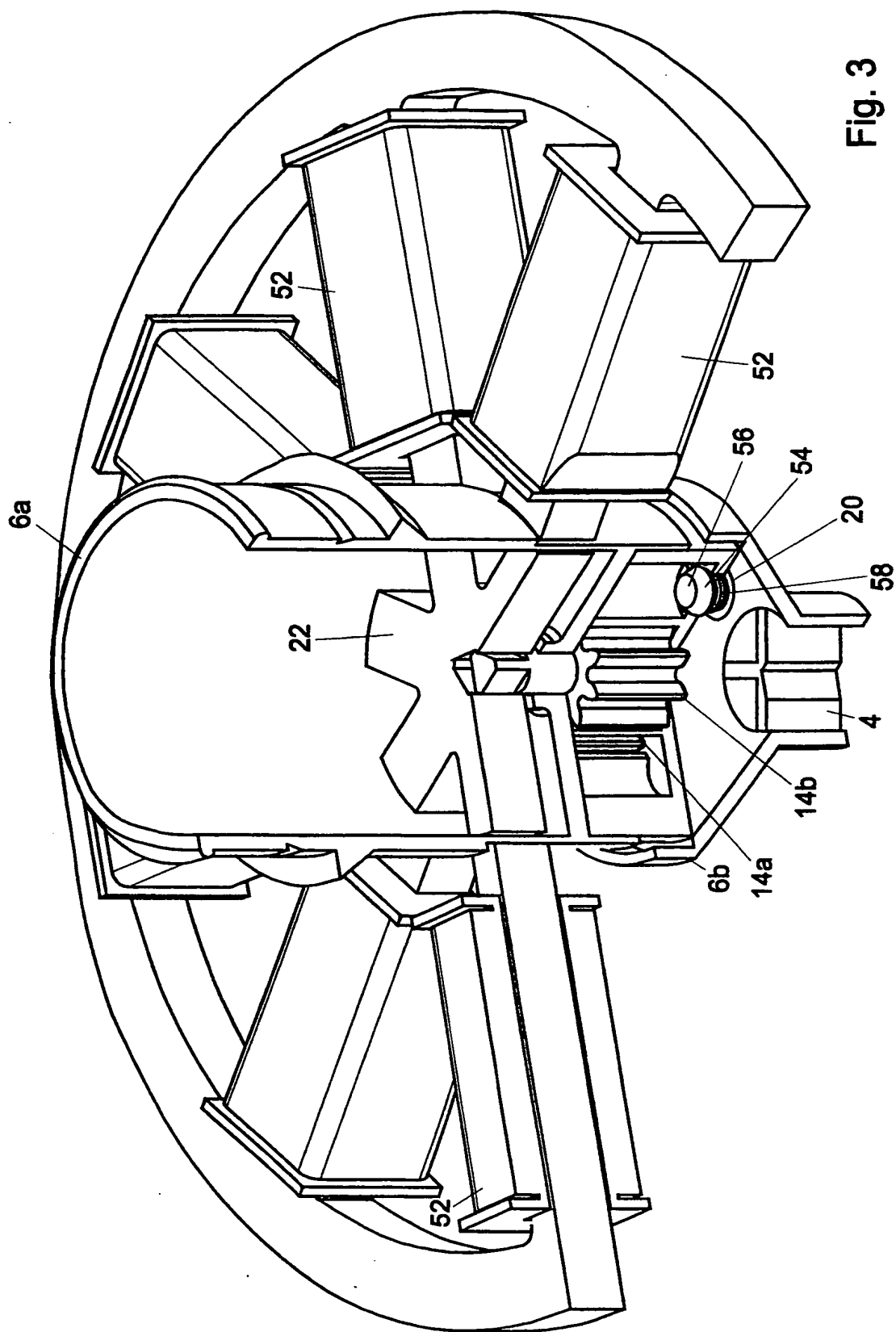


Fig. 2

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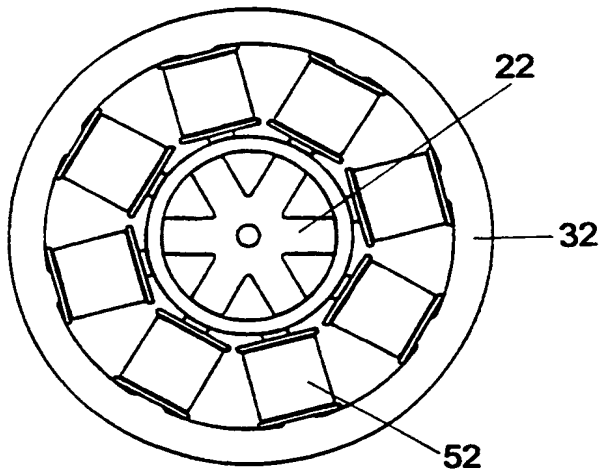


Fig. 5a

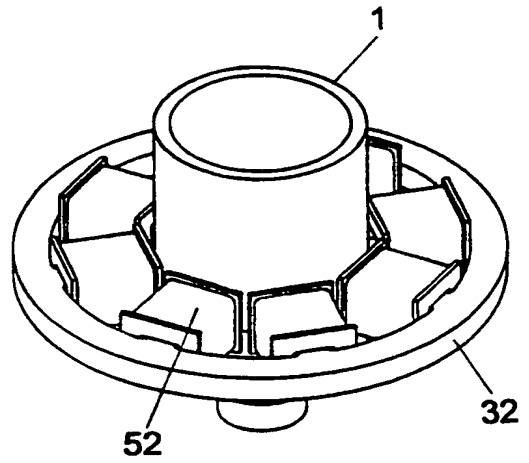


Fig. 5b

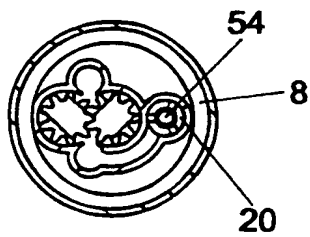


Fig. 4a

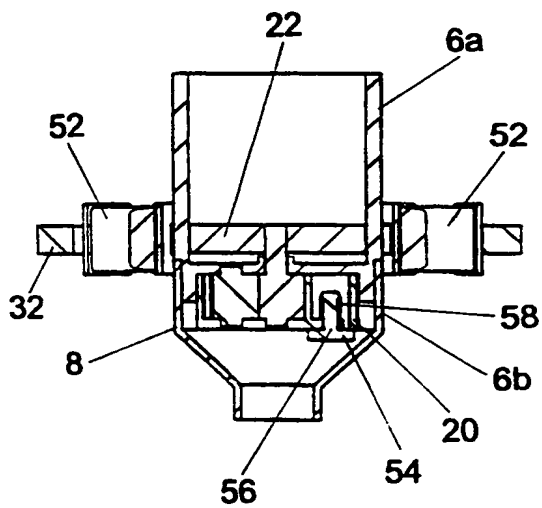
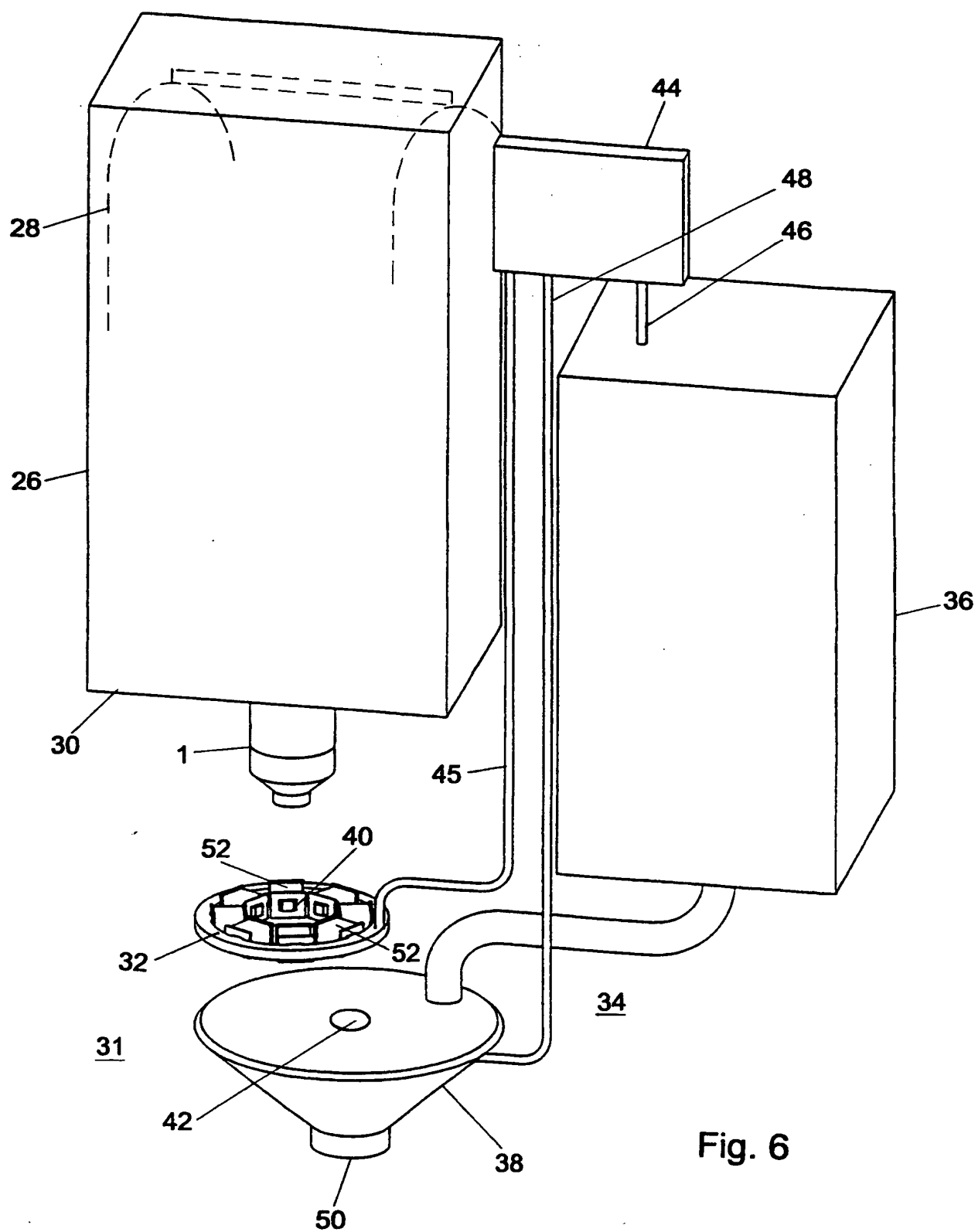


Fig. 4b

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(71) Applicant (*for all designated States except US*): **SARA LEE/DE N.V.** [NL/NL]; Keulsekade 143, NL-3532 AA Utrecht (NL).

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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: **DOSING DEVICE ADAPTED FOR DISPENSING A CONCENTRATE FROM A HOLDER IN A METERED MANNER**

(57) Abstract: The invention relates to a dosing device comprising a housing comprising at least one inlet, at least one outlet, and a liquid flow path extending from the inlet to the outlet. The dosing device is adapted for dispensing in a metered manner a viscous concentrate from a holder. The concentrate in diluted condition forms a beverage suitable for consumption. The dosing device is adapted to be connected, in use, to a storage space of the holder. According to the invention, the dosing device comprises a gear pump to be included in the liquid flow path, which gear pump can be driven in particular by a rotor located upstream of the gear pump, by means of changing magnetic fields.

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# INTERNATIONAL SEARCH REPORT

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## A. CLASSIFICATION OF SUBJECT MATTER

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A	US 5 836 482 A (OPHARDT HEINER ET AL) 17 November 1998 (1998-11-17) column 1, line 4 - line 12 column 3, line 65 - column 16, line 61; figures 1-13	1-13
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Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 067 466 A (DOUWE EGBERTS TABAKSFAB) 22 December 1982 (1982-12-22) page 17, line 1 -page 24, line 19; figures 1-4	1-13

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(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>P53578PC00</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/NL 00/ 00427</b>	International filing date (day/month/year) <b>20/06/2000</b>	(Earliest) Priority Date (day/month/year) <b>21/06/1999</b>
Applicant  <b>SARA LEE/DE N.V. et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

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☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

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5. With regard to the **abstract**,

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☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawing** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☒ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1

☐ Non of the figures.

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